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Reply to Office action of October 26, 2010

REMARKS / DISCUSSION OF ISSUES

Claims 1 – 6 and 8 – 10 are pending in the application. Claims 1, 4 and 8 are independent.

In the present response, claims 1 and 8 are amended. The support for the claim amendments may be found in Applicants' specification, for example, page 6, lines 12 – 22. No new matter is added.

35 U.S.C. 112

The Office Action rejects claims 1 – 6 and 8 – 10 under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the enable requirement. Applicants respectfully traverse.

The Office alleges that the evidence "Distance: From Wikipedia, the free encyclopedia," as indexed by www.archive.org, October 12, 2007 (hereinafter referred to as the Archive), shows that undue experimentation is needed to make or use the invention which comprises the mathematical distance measure. Applicants respectfully disagree.

Applicants submit that based on the same evidence, the Archive clearly shows that mathematical distance measures are well-known and well-defined in the art. As pointed out by the Office Action, the Archive contains examples of mathematical distance measure, which are readily available for a skilled person to use. Therefore, Applicants submit that it does not require undue experimentation to make and use the claimed invention.

Furthermore, Applicants submit herewith an affidavit by Fons Bruekers, the co-inventor of the present application, as evidence that, at the time of the invention, a person of ordinary skill would be able to carry out the processes disclosed in pages 5 – 6 of the instant application, including a mathematical distance measure, without undue experimentation.

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In view of at least the forgoing, Applicants submit that the original filed specification meets the enablement requirement. Withdrawal of the rejection of claims 1 – 6 and 8 – 10 under 35 U.S.C. 112, first paragraph, is respectfully requested.

35 U.S.C. 101

The Office Action rejects claims 1 – 3 and 8 – 10 under 35 U.S.C. 101 because the claimed invention is allegedly directed to non-statutory subject matter.

In the present response, claims 1 and 8 are amended to include the recitation of a "processor." Applicants submit that the claimed methods are performed by a processor, and therefore the claimed invention is not an abstract idea.

Withdrawal of the rejection of claims 1 – 3 and 8 – 10 under 35 U.S.C. 101 is respectfully requested.

35 U.S.C. 103

The Office Action rejects claims 1 – 6 and 8 – 10 under 35 U.S.C. 103(a) over Wells et al. (U.S. Pat App Pub 2003/0086341 A1), hereinafter referred to as Wells, in view of Lofgren et al. (U.S. Pat App Pub 2002/0154144 A1), hereinafter referred to as Lofgren, in further view of Levy et al. (U.S. Pat App Pub 2003/0021441 A1), hereinafter referred to as Levy.

Applicants submit that for at least the following reasons, claims 1 – 6 and 8 – 10 are patentable over the combination of Wells, Lofgren and Levy.

For example, claim 1, in part, requires:

"if multiple second fingerprints are matched that have a mathematical distance measure less than a predefined limiting distance from the first fingerprint, calculating a digital watermark associated with the first data sequence and comparing the calculated digital watermark with watermarks respectively associated with the matched multiple second fingerprints' respectively associated second digital data sequences in order to establish an identity of the first digital data sequence; otherwise, the first fingerprint is established as unique."

Applicants submit that Wells is related to automatic identification of sound records, and Wells' identification procedure is fundamentally different from that of the claimed invention.

Wells, paragraph [0199], discloses:

The flowchart of the algorithm is shown in FIGS. 7A and 7B. The first element 701 of a candidate fingerprint is searched against the first element of the set 702 of all reference fingerprints. The search looks for a reference element or elements within a distance 703 of the candidate element. This distance corresponds with the vector thresholds $[T_1 T_2 \dots T_N]$ described above. If no match or matches are found the search is abandoned 704. If a match or matches are found, the number of matches is determined 705. If the number of matches is above some predetermined number, referred to as M above, the second element 706 of the candidate fingerprint is compared against the second element of the set 707 of reference fingerprints which matched on the first element. If a match or matches are found 708, the number of matches is determined 709. The element-by-element search is continued to the last candidate element 710 which is searched against the last element in the set 711 of the reference fingerprints that matched on all of the preceding elements. If the last candidate element 710 matches 712 with one or more of the last reference elements 711, but the number of matches is bigger 713 than some set size, the search is abandoned 714. If any of the preceding elements do not match any reference elements, the search is abandoned 715, 716. (Emphases added)

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According to Wells, a fingerprint X contains N elements, i.e., $X = [x_1 \; x_2 \ldots x_N]$ (see, for example, Wells, paragraph [0202]). From the above passage, it is clear that Wells does not determine a mathematical distance measure between the fingerprints, but rather compares an element of the fingerprints. Wells teaches an element-by-element search, i.e., comparing the first element, and if there are too many matches then try the second element, as so on. Applicants submit that such element-by-element search does not determine a mathematical distance measure between fingerprints, but rather the absolute value between an element of one fingerprint and the corresponding element of another fingerprint (see, for example, Wells paragraph [0203]). Therefore, Wells does not teach or suggest comparing the first and second fingerprints to determine if multiple second fingerprints are matched that have a mathematical distance measure less than a predefined limiting distance from the first fingerprint.

In the Office Action, page 11, the Office concedes that Wells does not disclose calculating a digital watermark associated with the first data sequence and comparing the calculated digital watermark with second digital data sequences in order to establish an identity of the first digital data sequence.

Although Lofgren teaches calculating a digital watermark associated with a first data sequence and comparing it with that of a second digital data sequence and Levy teaches watermarks respectively associated with the multiple second fingerprints, Applicants submit that there is no reason to apply the teachings of Lofgren and Levy to Wells.

Wells, paragraph [0200], discloses that once the number of those matches is below some number, the <u>closest</u> of those matches is determined to be the matching fingerprint. Since Wells already establishes a procedure for determining the matching fingerprint as the <u>closest</u> of those matches, there is no need to further determine a watermark to distinguish among those matches.

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In the Office Action, page 11, the Office asserts that the reason to combine Lofgren and Levy to Wells is to provide uniquely identifying proprietary content whilst maintaining the integrity and quality of the original media. Applicants respectfully submit that this is not a valid reason to combine these references. Since Wells already establishes a procedure for identifying the sound recording, there is no need to further determine a watermark for identification. As Wells' procedure apparently does not affect the integrity and quality of the original media, the watermark does not provide such advantage.

Furthermore, the principle operation of Wells is to compare element-by-element of the fingerprints until the closest match is found. Including the watermark matching from the teachings of Lofgren and Levy would fundamentally alter the element-by-element comparison of Wells, because in Wells the closest match is determined to be the matching fingerprint, not the one that matches the watermark. According to MPEP 2143.01 VI, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. Therefore, it is not obvious for a skilled person to combine and modify the teachings of Wells, Lofgren and Levy to arrive at the claimed feature of: if multiple second fingerprints are matched that have a mathematical distance measure less than a predefined limiting distance from the first fingerprint, calculating a digital watermark associated with the first data sequence and comparing the calculated digital watermark with watermarks respectively associated with the matched multiple second fingerprints' respectively associated second digital data sequences in order to establish an identity of the first digital data sequence.

In view of at least the foregoing, Applicants submit that claim 1 is patentable over the combination of Wells, Lofgren and Levy.

Independent claims 4 and 8, although different from, and should be interpreted independently of, claim 1, contain many similar distinguishing features as in claim 1. Applicants essentially repeat the above arguments for claim 1 and apply them to claims 4 and 8, pointing out why claims 4 and 8 are also patentable over the combination of Wells, Lofgren and Levy.

Claims 2, 3, 5, 6, 9 and 10 respectively depend from and inherit all the respective features of one of claims 1, 4 and 8. Thus, claims 2, 3, 5, 6, 9 and 10 are patentable for at least the reason that they respectively depend from one of claims 1, 4 and 8 with each dependent claim containing further distinguishing features.

Withdrawal of the rejection of claims 1 – 6 and 8 – 10 under 35 U.S.C. 103(a) is respectfully requested.

Conclusion

In view of the foregoing, Applicants respectfully request that the Examiner withdraw the objection(s) and/or rejection(s) of record, allow all the pending claims, and find the application in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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